OPERATION MANUAL
Walk behind power trowels
Type LTM 600 - 900

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1. Preface

This manual has been written to help you operate and maintain the walk behind power trowel LTM safely. This manual is intended for dealers and operators of LTM machines and contains useful instructions for use, maintenance and repair. These instructions need to be respected and followed.

Guarantee provisions
All damage to parts of these machines, occurring within 12 months after date of purchase as a consequence of material, production or construction defects, will be replaced by the manufacturer as soon as possible.

The manufacturer declines all responsibility for unsafe situations, accidents and damage caused by:

- Ignoring safety and using instructions as described on the machine or the instruction manual.
- Incompetent or incorrect maintenance
- Alternations of the machine carried out by other than manufacturer. This also includes assembling of non-original parts.
- Storing the machine in a damp place.
- Cleaning of the machine with a high pressure cleaner or by a water jet under high pressure.
- Other use than the prescribed use.

(Furthermore, all deliveries are according to the general conditions of the METAALUNIE)

Guarantee certificate

LTM nr. _____

Date of purchase: _____

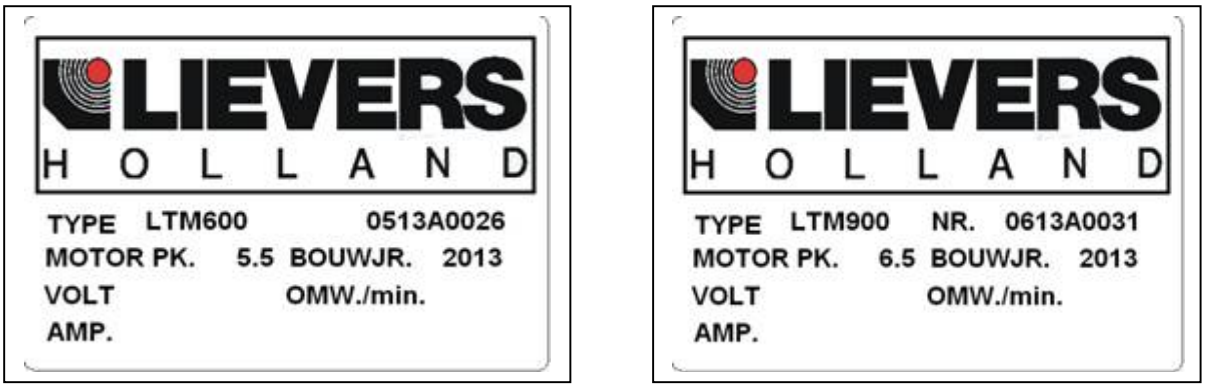

Fig. 1: ratingplate LTM

The ratingplate can be found on the front of the machine on the drive belt guard.

2. Introduction

Intended use
A mechanical power trowel is a machine fitted with 4 rotating blades and/or a round float pan. It can be used to compress, scour, level and smoothly finish concrete and cement floors.

Operation
The petrol engine uses drive belt transmission to rotate the 4 blades and/or the float pan. The trowel blade revolution speed can be regulated using the petrol engine's accelerator handle. By using the preparation blades and/or float pans, combination or finishing blades, the surface of the concrete floor can be finished to the required density, evenness and smoothness.

3. Technical specifications

Technical specifications

	LTM 600	LTM 900
Diameter stabilizer ring	60 cm	95 cm
Working diameter	60 cm	90 cm
Ready weight	59 kg	81,5 kg
Petrol engine	5,5 HP Honda	6,5 HP Honda
Blade r.p.m.	max 130	max 125
Fuel	unleaded petrol	unleaded petrol

Table 1: Technical specifications

PRODUCT SPECIFICATIONS	
System process	The scouring, levelling and smooth finishing of fresh concrete surfaces.
Process	The rotation of 4 blades by means of mechanical power.
Noise level	Max. of 75 dB (A) outdoors – measured while functioning on wet sand.
Vibration acceleration	< 2.0 m/s2 - measured while functioning on wet sand
Maintenance	Clean with water (brush or damp cloth)
Capacitiy	See page 2
Working space required	Portable design. 200 x 200cm in total incl. trowel blades and/or float pan

Table 2 : Product specifications

4. Safety

Explanation of safety symbols used

1. Read the manual before using the machine.
2. Safety glasses, safety helmet and ear protection compulsory.
3. Gloves compulsory
4. Safety shoes with extra protection compulsory.
5. Caution, flammable substances.
6. Look out and be careful.

Fig. 2: safety symbols

ENSURE THAT ALL SYMBOLS – ON THE MACHINES – CAN ALWAYS BE CLEARLY READ .

4.1 Safety aspects

The following safety aspects apply to the machine:

- Safety symbols are present on the walk behind power trowel LTM.

4.2 Safety precautions

All machines manufactured by LIEVERS are developed and tested in accordance with strict international safety standards.

Ensure that you are qualified (you are familiar with the contents of this user manual) to operate the machine and to perform minor maintenance on it.

- Ensure that you are qualified (you are familiar with the contents of this user manual) to operate the machine and to perform minor maintenance on it.
- Before use, read the user manual carefully and, in case of any doubt, contact the manufacturer.
- Regular maintenance promotes the safe use of LTM power trowels.
- Wearing of ear protection, safety goggles, safety helmets, protective footwear and safety gloves is mandatory.
- On (building) sites, take note of the general applicable safety instructions, as well as those compiled by the client. Inform yourself about these before you start working.
- When cleaning the machine, ensure that no high-pressure water or cleaning products are used.
- If you are not going to use the machine for a long period of time, it must be stored in a clean and dry area.

The following safety aspects apply specifically to petrol-powered LTM power trowels:

- The power trowel must not be operated by minors.
- Keep children and bystanders away from the working area.
- Stay away from rotating parts while the machine is in operation.
- When starting the engine, the throttle must be in the idle position and the switch needs to be pressed.
- Never put your foot on the trowel's stabilizer ring.
- Be extremely careful when operating the power trowel near reinforcing steel, pipes, walls and edges. The trowel blades can strike such objects, causing possible damage to the machine or injury to the operator. Finish these areas with a hand trowel.
- When working with the machine, make sure that you have solid footing so that you can maintain control and steer it effectively.
- Before using the machine, you must test the safety switch. This switch stops the machine when the operating handle is released.

WARNING: NEVER TRY TO GRAB OR STOP A ROTATING OPERATING HANDLE. THIS CAN LEAD TO SERIOUS INJURY.

- Never use the power trowel without the belt-drive guard.
- Ensure adequate ventilation when the machine is used in walled-in spaces.
- When using a LTM 600, always make sure that the foldable handle has been fasted before the machine is started
- The inhalation of exhaust fumes is extremely dangerous to your health and the health of your colleagues.
- Do not refuel in the presence of open flames such as burning cigarettes, etc.
- Before using the machine, check that no fuel has been spilled.
- When refuelling, wear safety gloves, protective footwear, safety goggles and protective clothing.
- When refuelling, ensure adequate ventilation.
- Refuelling must only take place once the engine has sufficiently cooled down.
- Refuelling before the machine has sufficiently cooled can result in extremely hazardous situations.

Refuelling is prohibited in:

- The immediate area of an open fire or heat source.
- An explosion risk area.

NEVER SMOKE WHILE POURING PETROL INTO THE FUEL TANK OF THE PETROL ENGINE!

Tip: Contact your dealer or LIEVERS HOLLAND if you do not fully understand the safety instructions.

Contact details: LIEVERS HOLLAND, PO Box 103, 3640 AC Mijdrecht.
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5. Use

BEFORE USE, READ THE USER MANUAL CAREFULLY AND, IF IN DOUBT, CONTACT THE MANUFACTURER.

5.1 Preparing the LTM 600/900 for use

Before the machine is used, all the aspects of operation must be checked.

Blade angle adjustment

The LTM power trowel is provided with a blade angle adjustment system. A large rotating aluminium knob is located on the front of the operating handle. By turning the knob clockwise (to the right), the working angle of the blades in relation to the concrete surface is increased. By turning the knob anti-clockwise, this angle is decreased. This blade angle adjustment is used as the concrete sets during the finishing of the concrete surface. A shallow blade angle setting is only effective on a moist and soft concrete surface. As the concrete hardens, the blades will have to be set at more of an angle to have a polishing effect, thereby giving it a beautifully smooth finish.

Blades and float pans

LTM power trowels are standard supplied with finishing blades. These finishing blades are suitable for the finishing of concrete surfaces. If desired, we can equip the machine with combination blades, and, furthermore, preparation blades and float pans are available as optional extras. We recommend you to use original Lievers blades. These blades are specially designed for LTM machines and are manufactured from high-quality stainless steel. When worn, the blades must be replaced (see 'replacement of trowel blades' section in the maintenance and repair chapter).

5.2. Operation and use of the LTM 600/900 power trowel

When can the power trowel be used?

The power trowel can be used when the top layer of the concrete surface has hardened to such an extent that only a light footprint remains when you stand on it.
Below, you will find a description of the starting procedure and an introduction to working with the LTM power trowel (starting and stopping the petrol engine):

1) With a colleague's help, place the machine onto the concrete surface carefully to prevent damaging of the surface.
2) Ensure that the fuel tank is full and that there is sufficient oil in the crankcase.
3) Turn open the fuel tap.
4) Ensure that the switch on the motor is in the ON position.
5) Close the choke and throttle and press the switch.
6) Pull on the starter cord until you feel resistance and then give it a short, powerful tug. Caution: don't pull the starter cord all the way out. It can break. Use a maximum of ¾ of its total length.
7) Once the engine has started, gradually open the choke until the engine runs smoothly. Allow the engine to warm up for 2 to 3 minutes and then open the choke completely.

WARNING: HOLD THE OPERATING HANDLE WHILE THE ENGINE IS RUNNING!

8) Stand behind the machine between the steering handles and firmly grasp the steering handles. Gradually increase the engine's revolutions by opening the throttle .

WARNING: DO NOT USE THE POWER TROWEL BEFORE THE ENGINE IDLE LEVEL IS CORRECTLY SET.

9) The power trowel can be steered by placing light hand pressure on the machine's steering handles.
   a. If you press down with your left hand on the left steering handle, the machine will turn towards the left.
   b. If you lift the left steering handle with your left hand, the machine will turn towards the right.

WARNING: DO NOT MOVE THE MACHINE WHILE THE ENGINE IS RUNNING. NEVER LIFT THE MACHINE BY ITS STABILISER RING.

10) After use, let the engine run idle for 1 to 2 minutes to allow it to gradually cool.

6. Maintenance

Regular maintenance will help ensure the long and trouble-free life of your LTM power trowel.

6.1. General maintenance

PLEASE NOTE: DO NOT LET CONCRETE RESIDUE HARDEN ON THE MACHINE. AFTER USE, REMOVE DIRT AND CONCRETE RESIDUE FROM THE MACHINE IMMEDIATELY. USE A BRUSH OR A BROOM TO REMOVE DIRT AND CONCRETE RESIDUE. AFTER CLEANING THE MACHINE, THE TROWEL ARMS AND BLADES MUST BE COATED IN BOND BREAKER OIL. THIS PREVENTS RUST AND MAKES THE CLEANING OF THESE PARTS EASIER.

WARNING: NEVER USE A HIGH-PRESSURE SYSTEM OR WATER JET TO CLEAN AN LTM POWER TROWEL.

6.2. Cleaning and maintenance of petrol-engine power trowels

Daily maintenance

1) For the engine to cool effectively, the ventilation gaps must be free of oil and dirt. Check this at the end of every working day.
2) If necessary, clean the ventilation gaps using a brush or damp cloth.
3) For the carburettor regulation mechanism to work effectively, check it for any possible pollution , f.i. concrete residue, after every use. If necessary, clean the mechanism using a brush or damp cloth.
4) Check the engine oil level. If necessary, fill the oil reservoir to the uppermost mark on the dipstick.
5) Check the gearbox oil level by unscrewing the inspection plug on the side of the gearbox. The oil should be on the same level as the inspection plughole. If necessary, fill with ISO 680 gearbox oil.
6) Clean the foam-rubber filter inside the air filter.
7) Check the performance of the blade angle adjustment mechanism.
8) Check the performance of the safety switch

Maintenance after approximately 20 hours of use.

1) Clean the air and fuel filters. Rinse the filters with clean benzene and wring them out after about 10 minutes.

Maintenance after approximately 50 hours of use.

1) Clean the sparkplug. Clean the sparkplug with a copper brush and set the correct electrode gap.
2) Thoroughly check the drive belt and the centrifugal clutch.
3) Check the trowel blades for wear.
4) Change the engine oil (SAE 15 W 30).

Long-term storage

1) Remove the sparkplug and pour 5cc of new motor oil into the sparkplug hole. Pull the starter cord a few times and replace the sparkplug.
2) Pull on the starter cord until the piston creates compression.
3) Spread a thin layer of motor oil on the engine's surface using an oil-soaked cloth.
4) Store the power trowel in a clean, dry area.

6.3 Replacing blades

TIP: REMOVE THE SPARKPLUG CAP BEFORE REPLACING BLADES.

1) Ensure that the machine is steady and level. Set the blade angle so that the blades level with the concrete surface.
2) Undo the 2 bolts and washers that secure each blade to the trowel arms using a spanner or socket (LTM 600 - 10 mm, LTM 900 - 13mm). Remove all blades in this way.
3) Before mounting the new blades, remove any concrete residue from the bottom and sides of the trowel arms.
4) Mount the new blades. If you are using combination blades, you must ensure that the right-hand side of the combination blade is behind the trowel arm. This means that the rounded side of the combination blade must face towards the turning direction of the machine (clockwise, to the right).
5) Replace the 2 bolts and washers on each trowel arm and tighten the bolts.

7. Trouble shooting , repairs

Contact details Lievers Holland:

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Internet: www.lieversholland.com

Repairs

It is not strictly necessary to keep spare parts of the LTM in stock. If you prefer to have parts in stock, please ask your supplier or dealer for advice

When ordering parts please state the following information:

- Type of machine
- Year of construction.
- Order number plus description of the part.
- The required quantity.
- The dispatch address and dispatch mode.

TIP: WHEN ORDERING PARTS, FILL IN THE ORDER FORM ACCURATELY. LIEVERS B.V. DECLINES ALL RESPONSIBILITY FOR THE SUPPLY OF INCORRECT SPARES DUE TO INCOMPLETE OR UNCLEAR REQUESTS.

8. Dismantling, disposal

Safe disposal
A guideline on behalf of the environment. An old machine still contains valuable materials. You can take a scrapped machine and any accessories to your nearest official collection site.

Materials used
The machine is manufactured using the following materials:

PART	MATERIAL
Engine housing	Aluminium
Gearbox	Aluminium
Gears	Bronze / steel
Stabiliser ring	Steel (LTM 900)/ aluminium (LTM600)
Misc parts (small)	Steel
Trowel blades	Steel
Safety switch	Nylon 6
Drive belt guard	Synthetic
Drive belt / hand grips	Rubber
Operating handle	Steel
Drive shaft	Steel

Table 3: Construction materials used

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9. Declaration of conformity

EC DECLARATION OF CONFORMITY

EC-declaration of agreement for machinery
(Directive 2006/42/EC, Annexe II, under A)

Supplier: Bouwmachinefabriek Lievers B.V.
Address: Groot Mijdrechtstraat 68, 3641 RW Mijdrecht

Hereby declares that

the walk behind power trowels type LTM 600 /900

1) Complies with the regulations for the Machine Directive 2006/42/EC and the EMC-Directive 2004/108/EC.

2) complies with the following harmonised standards: NEN- EN 12649

Mijdrecht, 1 April 2010

Supplier: Bouwmachinefabriek Lievers B.V.
Address: Groot Miidrechtstraat 68. 3641 RW Mijdrecht

Name: C.M. de Wit
Position: Managing director

QualityMasters GECERTIFICEERD ISO 9001